The Canadian Press

April 11, 2008 at 2:16 PM EDT

WARD HUNT ISLAND, Nunavut — New cracks in the largest remaining Arctic ice shelf suggest another polar landmark seems destined to break up and disappear.

Scientists discovered the extensive new cracks in the Ward Hunt Ice Shelf earlier this year and a patrol of Canadian Rangers got an up-close look at them last week.

“The map of Canada has changed,” said Derek Mueller of Trent University, who was amazed to find how quickly the shelf has deteriorated since he discovered the first crack in 2002.

“These changes are happening in concert with other indicators of climate change.”
Canadian Ranger Samson Ejanqiaq looks along the length of one of the gaping new cracks in the Ward Hunt Ice Shelf, the largest ice shelf left in the Arctic on April 1.

Mr. Mueller and his fellow researchers were expected to release their findings on Saturday. But a patrol of Canadian Rangers travelling west last week from CFB Alert at the northern tip of Ellesmere Island saw the cracks first-hand.

“We're looking at the possible demise of the Ward Hunt Ice Shelf,” said Doug Stern, a Ranger and Parks Canada employee, who was on the patrol and has been helping Mueller with his research.

Formed by accumulating snow and freezing meltwater, ice shelves are large platforms of thick, ancient sea ice that float on the ocean's surface. Ellesmere Island was once ringed by one, but that enormous shelf broke up in the early 1900s.

At 443 square kilometres in size, the Ward Hunt shelf is the largest of those remnants — even bigger than the Antarctic shelf that collapsed late last month, and seven times the size of the Ayles Ice Shelf chunk that broke off in 2005 from Ellesmere's western coast.

The Ward Hunt shelf's characteristic corrugated surface, described by Mr. Mueller “like a giant Ruffles potato chip,” is now fractured by dozens of deep cracks in the 3,000-year-old, 40-metre thick ice.

Mr. Mueller found evidence of one of the new cracks in satellite images. Then he and Mr. Stern followed up with an aerial survey earlier this year.

“We were expecting to see one new crack,” said Mr. Stern. “But when we flew over, all of a sudden...there's one, there's another one.

“There are not just a couple of parallel cracks. It's multifaceted cracking going on. I was just totally amazed to see them all.”

The Rangers found even more, and as part of their patrol they measured and documented as many of the new cracks as they could. One was 10 kilometres long and up to 40 metres wide.

The cracks, easily large enough to swallow a snowmobile, presented an extra hazard for the patrol's scouts as they picked a route across the ice between CFB Alert and Ward Hunt Island.

The Ward Hunt Ice Shelf, one of the last five remaining in Canada, has been shrinking since the 1930s. But after a period of stability during the '80s, that deterioration seems to picking up, said Mr. Mueller.

That suggests climate change in the area has crossed some kind of threshold, he added.

Other data on the shelf is also not encouraging.

As far back as the 1960s, poles were sunk 2.5 metres deep into the ice. Annual measurements of how much those poles protrude from the surface indicate whether the ice is thickening or thinning.

This year, several poles couldn't even be found by the Rangers, suggesting the ice had completely melted out from under them.

Pinned in place by islands and landfast ice, the Ward Hunt Ice Shelf is unlikely to drift out to sea, said Mueller. It's more likely to become increasingly fractured and deteriorate where it sits.

The bottom line is the vast plain of ice is now on “life support,” he said. Ice shelves are not replenished by glaciers. Cracks in them are permanent.

“You can't go back,” said Mr. Mueller. “It's broken.”

On its own, the Ward Hunt Ice Shelf represents only a tiny fraction of the Arctic Ocean's ice. But its loss is another example of the slowly shrinking ice cover, a loss that scientists suspect will permanently change the Arctic ecosystem and add to global warming, since open water absorbs more solar heat.

The rapid changes point to the need for more research to understand what's going on, Mr. Mueller said.

“We're trying to gather clues as to what's in store and what's the significance overall. We know very little about this coastline. It's important for us to get out there and take real measurements.